

## FULLER'S SYNERGETICS AND SEX COMPLEMENTARITY

The question of a productive model for the interaction of man and woman is one that increasing numbers of philosophers are struggling to formulate. A typology of some of these models can be described as follows: sex unity claims that there are no philosophically significant differences between man and woman, and as a consequence that they are equal; sex polarity claims that there are philosophically significant differences between the sexes and that man is by nature superior to woman; and reverse sex polarity inverts sex polarity by holding the second premise that woman is by nature superior to man.<sup>1</sup> The earliest formulation of these theories were given by Plato, Aristotle, and Agrippa, respectively; however they are also found in contemporary articulation in the works of Firestone, Tiger, and Daly for example.<sup>2</sup>

Sex complementarity maintains a position in between the two extremes of sex unity and sex polarity. Namely, it claims that there are philosophically significant differences between man and woman, but that neither sex is superior by nature to the other. Sex complementarity was first formulated by Hildegard of Bingen, and today is still awaiting a convincing contemporary formulation.<sup>3</sup> In the modern period of philosophy some distinction was made between what could be called a fractional

sex complementarity and an integral sex complementarity. The former theory divides up the differences between the sexes in such a way that one sex has a fraction of the characteristic that the other sex completes. In this way the two together simply make up one whole individual.<sup>4</sup> Integral sex complementarity, on the other hand, claims that man or woman is complete in his or her own identity, and that together they make up more than a single individual.

The philosophical theory of integral sex complementarity offers a possibility for examining the interrelationship between woman and man in dynamic new ways. It is in line with this goal that I propose to examine some of the hypotheses about complementarity articulated by R. Buckminster Fuller in Synergetics: Explorations in the Geometry of Thinking.<sup>5</sup> Fuller claims to have discovered some of the fundamental laws of nature's coordinate system. If indeed he has discovered fundamental laws of the natural world, it would be worth while to consider to what extent these laws reveal philosophically significant aspects of human identity, and more specifically to determine whether or not they reveal anything philosophically significant about sex identity.

#### The Principle of Complementarity

Fuller claims that in 1922 Niels Bohr discovered the principle of the "fundamental complementarity in physical universe."<sup>6</sup> This discovery occurred in connection with the resolution of a conflict between the wave and particle theory of

light. Bohr concluded that light is not limited to one or the other. In the Newtonian or macro world light can be understood as having the properties of a wave; while in the Einsteinian or micro world light can be understood as a particle. Therefore, the principle of complementarity implies that both theories are necessary for an explanation of the nature of light. Fuller summarizes this 'principle of complementarity' as: "two descriptions or sets of concepts, though mutually exclusive, are nevertheless both necessary for an exhaustive description of the situation." <sup>7</sup>

A second part of the principle of complementarity was also identified by Fuller as resulting from a discovery in physics. In 1957 Lee Yang was given the Nobel Prize in Physics for discovering that parity is not conserved in Beta decay. The implications of this discovery for complementarity is that the mirror image of Beta decay does not look the same as Beta decay in real life. Fuller refers to this discovery as "Proof that the complementarities were not 'mirror images' of one another." <sup>8</sup> A more complete summary of the role of physics in the theory of complementarity is found in Synergetics.

Physics tends to think of complementarity and parity as being the interrelationship characteristics of two separate phenomena. Complementarity was discovered half a century ago, while parity was first recognized only 20 years ago. In fact the non-mirror-imaged complementations are two aspects of the same phenomenon. The always-and-only-coexisting non-mirror-image complementations also coexists as inseparable plural unity. <sup>9</sup>

Fuller offers various analogies of the principle of

complementarity. One example comes from a consideration of the tides: "These tidal covariables are typical complementarities: they are not mirror images of one another, but must always balance one another complexedly in physical equations."<sup>10</sup> He also considers complementary angles in geometric structures.<sup>11</sup> Fuller suggests that all systems manifest a "universal non-mirror-imaged complementarity."<sup>12</sup> The central question of this paper is how does the principle of complementarity analogically relate to the philosophical study of man and woman? Prima facie it can be seen that the first part of the theory, or the claim that two mutually exclusive descriptions are necessary for an exhaustive description of the situation would have application in that an exhaustive description of human nature would need both a description of man and of woman as mutually exclusive complementaries. The second part of the principle of complementarity, or the non-mirror image of the complementaries would also be applicable to man and woman. Therefore, it would seem at first sight that there is some application of Fuller's use of the principle of complementarity for a philosophy of sex identity.

#### Concept of Man and Concept of Woman

Another central aspect of Buckminster Fuller's thought is the significance of the tetrahedron as the most stable three dimensional structure in the universe. He claims that: "The four-cornered tetrahedron is the minimum structural system in the

Universe." <sup>13</sup> While there are obvious applications of this claim in architecture, physics, or biology, the question at hand is whether or not it has analogical application to the philosophy of sex identity. One clue to its application comes from a consideration of the nature of a concept. If we search to delineate the concept of man or the concept of woman we are seeking to discover the minimum essential aspects of the nature of man or woman. What is it that is core to the concept of man or woman? Fuller states: "Any conceptual thought is a system and is structured tetrahedrally." <sup>14</sup> While this definition appears to be abstract and mathematical, Fuller will argue that it has application to philosophical questions of personal identity. He states directly: "You are a system." <sup>15</sup>

It would seem to follow then that if you, a man or a woman, are a system, then according to Fuller, the philosophical effort of delineating the core elements in your identity would be able to be structured in a tetrahedral form. It is strange at first sight to think of the minimum philosophical concept having a geometrical, or even more precisely a tetrahedral structure. However, when Fuller's claim is tested by a consideration of the key components in the history of the philosophy of sex identity a rather striking verification occurs.

To delineate the tetrahedral structure of the concept of man and of the concept of woman we need to find four separate vertices. In the history of philosophy we find that one vertex

after another is discovered in a chronological unfolding of the core elements in the concept of sex identity. A brief summary is listed below:

### Greek and Medieval

The first vertex of the concept of man is that of being male, or of the concept of woman of being female. This is primarily a biological category which includes originally anatomical, and more recently hormonal and genetic components. This category was considered by philosophers in greek and medieval philosophy. In the western tradition it was the central concern of the philosophy of sex identity from approximately 700 BC to 1400 AD. <sup>16</sup>

### Renaissance and Modern

The second and third vertices with application to both the concept of man and the concept of woman are masculinity and femininity. These are primarily psychic and they include a wide range of characteristics which flow from body structure, socialization, cultural tradition, and archetypal promptings. This category which includes both masculine and feminine components for a man or for a woman was considered by philosophers in the humanistic and modern periods of philosophy. In the western tradition it was one of the central concerns of the philosophy of sex identity from approximately 1400-1800.

## 19th Century and Contemporary

The fourth vertex is the discovery of man as an individual and woman as an individual which opened up the philosophy of self definition. This is a category which demands the use of the intellect and of the will in the creating of a human identity as man or as woman. It was considered by philosophers in the existentialist tradition, and it is associated with new developments in nineteenth century philosophy or the period from 1800--1930.

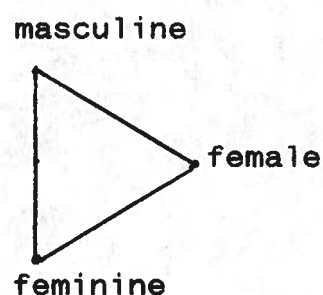
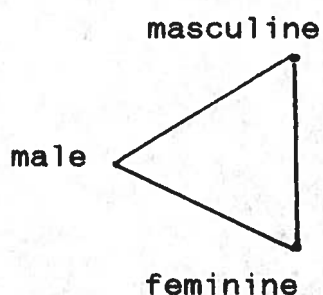
The historical evolution of a tetrahedronal structure of the concept of man and the concept of woman can therefore be sketched as follows:

700BC-1400AD  
one dimension  
one point

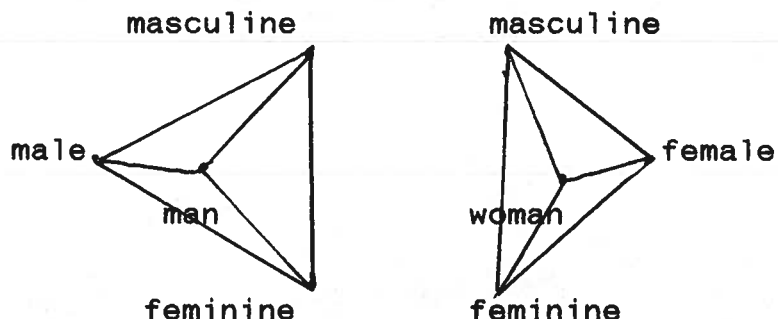
male .

.female

1400-1800  
two dimensions  
three points



1800-1930  
three dimensions  
four points



1930-present

Interpersonal dynamics moving from man as individual and woman as individual to man as person and woman as person.

From this brief introduction it can be seen that Fuller's principle of the tetrahedron as the prime system of conceptual thought has an interesting correlation with the chronological development of the concepts of sex identity. The four vertices of the concept of man would be: male, masculine, feminine, and man as individual. The four vertices for the concept of woman would be: female, masculine, feminine, and woman as individual.

At this point the details about the four vertices are left open to discovery and delineation. However, it is clear that any philosophical theory which seeks to delineate the concept of man or the concept of woman would need to take into consideration these four respective vertices. Furthermore, each vertex relates to every other vertex. It is important to mention that this structure does not intend to imply a universal content to every category delineated by a vertex. For example what is considered to be masculine or feminine within a specific culture varies. This means that when an individual man or woman enters



into the activity of self definition he or she must take into consideration the specific vertices of masculinity and femininity within his or her own culture.

There is less variability about the vertex of male and female because it usually involves a rather specified reference to anatomy, chromosomes, and hormones. However, with modern technology there are occasional exceptions to the general definition of maleness and femaleness which would have to be taken into consideration in self definition. It would be possible in these exceptional situations for a individual to define himself or herself as man or woman even if one of the usual biological components of maleness or femaleness were missing as long as a significant cluster of the other factors were present.<sup>17</sup>

It can also be seen that if a philosophical theory defines the concept of man or of woman with reference to only one vertex then the theory is simply limited to the consideration of an entry point. If the theory extends to two or three vertices then it is more inclusive to the extent that it has developed a linear or triangular dynamic. However, it still remains flat and two dimensional. It is only when the fourth vertex is added that the theory becomes three dimensional as is human life itself. Fuller refers to this as the crucial step to the creation of an inside and outside. He states: "a tetrahedron, a system, a division of Universe into inside and outside." <sup>18</sup>

Indeed, it is only during the historical period of the nineteenth century that a clarity is achieved about the philosophy of self definition which creates for the first time in western history a consciousness of the activity of the exercise of the intellect and will internally on the self. This activity genuinely creates an insideness and an outsideness about what it means to be a man or what it means to be a woman. Previous to this time the philosophy of sex identity was very much an exercise in defining maleness or femaleness or masculinity or femininity as a point or line, from an external point of view. There was no insideness and outsideness developed through the activity of self definition. <sup>19</sup>

From this cursory examination of the application of Fuller's discovery of the significance of the tetrahedron to the history of the concept of man and of the concept of woman, it can be concluded that there is an application to the chronological unfolding of core elements which can be analogously called vertices of a tetrahedron. If Fuller is correct these four elements would make up the minimum stable structure of the concept of man or of the concept of woman.

#### Fuller's Direct References to Sex Identity

When Buckminster Fuller's Philosophy is examined for direct statements about sex identity it turns out that he begins with a primary focus on the single vertex of male or female. In these entry points to the concept of man and woman he also

further focused on the anatomical aspect of maleness or femaleness. In one rather graphic example Fuller simply describes the way in which the Maori use sex identified symbols which inverts the usual western identification of the sea as female:

The Maori also look at males and females.  
 In the reverse primacy of the land-stranded Western culture.  
 Seventy-five percent of the planet is covered by the sea.  
 The sea is normal.  
 The male is the sailor.  
 The male is normal.  
 The penis of the normal sea.  
 Intrudes into the female land.  
 The bay is a penis of the sea.  
 The females dwell upon the land.  
 To the landsman the peninsula or penis  
 Juts out into the ocean.<sup>20</sup>

Even though Fuller is reflecting on an anthropological fact the analogy of male and female with anatomical structure is a theme which is frequently repeated in his works.

In another passage in Synergetics he considers the internal structure of a single tetrahedron in relation to maleness and femaleness:

We call the open ends male and the internal angles female. We can marry the two Z cobra, half quantum events in an always consistent, orderly manner, by always having a male end interconnected with an internal female angle. When all four such marriage ceremonies have been consummated, we have produced one tetrahedron, i.e., one quantum, i.e., one prime minimum structural system of Universe.<sup>21</sup>

The above example implies the fractional complementarity that was referred to in the introduction to this paper. In other words, the male and the female together make up one whole. Indeed, if only one point of reference from the concept of man and the

concept of woman is used, then a fractional complementarity is the inevitable result, or a fractional polarity. It is only when a full concept, with the four vertices, which brings forth the self definition of an individual man or woman, is present that integral sex complementarity is possible. However, this claim anticipates the conclusion of this paper.

To return to Fuller's direct discussions of sex identity, it appears that one of his most significant statements which focuses on the anatomical aspects of maleness and femaleness links them with convex and concave respectively:

"Male is convex;  $1/2$  system;  $1/2$  spin;  $1/2$  quantum  
Female is concave;  $1/2$  system;  $1/2$  spin;  $1/2$  quantum." <sup>22</sup>

Again the claim is presented in the context of a fractional complementarity. Fuller is considering the issue of regeneration and the role of male and female in that activity. This issue will be considered later in the context of synergy between man and woman. At the present moment it is important to consider the primary identification of maleness with convex and femaleness with concave.

Fuller describes a virgin as an example of prime insideness of concavity:

And virgin is half a system because unity is plural and at minimum two, the virgin being the prime insideness of concavity to be dimensionally or experientially and operationally realized only by special-case-recognized congruence of the convex outsideness with the inside concavity.<sup>23</sup>

So the female, because of her anatomical structure is identified with the concave, and the male because of his anatomical

structure is identified with the convex. It is important to note in passing that Fuller does not value convexity or concavity over the other. He holds the two in an equal valuation..

Fuller frequently writes about concavity and convexity in a dynamic rather than static aspect. In the following passage he also states that they are good examples of complementaries which are both needed for a full explanation of a thing and which are not mirror images of one another:

Because concaveness reflectively concentrates radiation impinging upon it and convexity diffuses radiation impinging upon it, concavity and convexity are fundamentally different, and therefore every system has an always and only coexisting inward and outward functionally differentiated complementarity.<sup>24</sup>

This would mean that man or woman considered conceptually as a four verticed tetrahedronal system would have both concavity and convexity as part of their identity, although their entry point in view of their anatomical structure would be as a male convexity or a female concavity. Fuller also considers the fact that the identification with concavity or convexity may be "spontaneously accounted as obvious" for one individual, although convexity and concavity are always both present. "The always and only coexisting convex and concave demonstrates that unity is plural and at minimum two, in which only one is spontaneously accounted as obvious."<sup>25</sup> In this example we have a parallel with the introduction of the two vertices, masculinity and femininity for the concepts of man and of woman. Both sexes have a concavity and convexity as part of their more fully developed identity although one sex is more identified with one of the

complements on the biological level of body structure.

A second set of complementary pairs that Fuller directly applies to the concept of woman and of man is: tension and compression. In an article entitled "Goddesses of the Twenty-First Century" he states:

Tension and compression always and only coexist, as do all the fundamental complementaries such as concave and convex, or associative and disassociative, proton and neutron, male and female...

Women are tensional and continuous. Each new female as well as male life comes from the womb of the woman. We have, then, the new female life as a series of expanding waves, the new ever emerging from within the older wave. Women are thus continuous...

Males are discontinuous. The new male life is noncontiguous to the previous male life. Men are, then, islanded, individual discontinuities.<sup>26</sup>

In Synergetics Fuller takes great care to develop the concepts associated with tension and compression.<sup>27</sup> Tension is the force expanding outwards while compression is the force pressing inwards. Instead, tension is considered to be light, it forms the basis for the thin wired bicycle wheel, or the large geodesic structures for which Fuller was so famous. Compression, on the other hand, is associated with the older wooden wheel of carts, or the supporting of buildings on large columns. Fuller applies the concepts of compression and tension to man and woman when he states: "Man is always thinking he can push things when they can only be pulled. Men are pushers. Women are attracters."<sup>28</sup> Fuller claimed further that tension aims towards arcs of increasing radius, while compression aims towards more specified differentiation.<sup>29</sup>

Fuller identifies the contemporary age with the discovery of tension as a principle that allows architects and engineers to "do more with less". By analogy Fuller considers the emerging significance of woman in the world. He mentions her increasing power over industry and industrialization. He foresees the time when "Women will be the undisputed managers of our 60,000 miles-an-hour speeding spaceship Earth in our ever fuller exploration of the universe within and beyond the solar system." <sup>30</sup> Finally, Fuller argues that the relation of man and woman will be changed by this new emergence of a more complete acceptance for woman's tensional identity. His argument follows exactly the historical progress from a primary focus on male and female, to masculine and feminine, to man and woman as individuals, and to man and woman as persons.

Twenty-first century woman will retain her tensional-integrity continuity and will yet cohere the universe. She will be extraordinarily attractive, but her metaphysical attraction will transcend her physical procreative attributes though these will not have lessened. No longer will the medium be the message. What will count most is what she thinks about man and not what she feels about you physically. In this way she can and will be able to love you forever and you will be able to and will love her forever. <sup>31</sup>

The shift from the biological base and feeling, to the metaphysical base and thinking in the interaction of woman and man was for Fuller a core component in their mutual development.

David Kelly, in an article in International Philosophical Quarterly entitled "The Philosophy of R. Buckminster Fuller" summarizes Fuller's twofold division of the universe into the Physical and the Metaphysical. Below is a shortened list of

categories in Fuller's thought which Kelly identifies as falling under this fundamental division:

<i>Physical</i>	<i>Metaphysical</i>
1. Body	1. Mind
2. Subjective	2. Objective
3. Temporal	3. Eternal
4. Unstable	4. Stable
5. Experiential	5. Intellective
6. Compressive (men)	6. Tensive (women)
7. Plural	7. Singular
8. Micro	8. Macro
9. Unidirectional	9. Omnidirectional
10. Special-case	10. Generalizations <sup>32</sup>

One of the more interesting aspects of this division for the philosophy of sex identity is that the category which would at first appear to have more value, or the metaphysical, is associated with woman and that of lesser value with man. For example, to have woman associated with mind, the objective, and the intellective; while man is associated with body, the subjective, and the experiential is a complete reversal of traditional post-Cartesian thinking about the two sexes.

In addition, a comparison of Fuller's 'table of complements' with the ancient Pythagorean table of opposites brings this reversal even more sharply into focus:

1. limit	1. absence of limit
2. one	2. many
3. odd	3. even
4. right	4. left
5. male	5. female
6. rest	6. motion
7. straight	7. curved
8. light	8. dark
9. good	9. bad
10. square	10. oblong <sup>33</sup>

Within this form of traditional sex polarity the female was consistently devalued in relation to the male, by her association



with the dark, the bad, and even the pejorative 'left'. In the light of this traditional devaluation of the female, Fuller's theory seems to suggest that woman, in her association with tension and with the metaphysical is superior to man. Indirectly Fuller moves almost towards what could be called a theory of reverse sex polarity in which the sexes are philosophically differentiated and the woman rather than man is given a superior valuation. However, for the most part Fuller is insistent that he is describing the complementary structure of the universe through his division into the metaphysical and the physical, tension and compression, and so forth, and he argues that neither part ought to be taken to be absolutely superior to the other. In fact, Fuller's prime objective is to explain what he calls the generative or regenerative quality of the universe through synergy which demands the interactive dynamic of both complements. Therefore, he would not directly defend the superiority of tension and the metaphysical over compression and the physical, although indirectly his work would support this interpretation. We will turn to this aspect of his philosophy to conclude our study.

### Synergy

In Synergetics Fuller states that: "Twoness is energetic. The twoness of inherent otherness of awareness is synergetic." <sup>34</sup> This description proposes a new understanding of the traditional subject-object dichotomy. In the twoness of man and woman there is "inherent otherness of awareness"

precisely because the basis of consciousness is different. In one it is a consciousness of being male, having a male orientation towards a culturally specified masculine and feminine, and defining oneself as man with this base of reflective self conscious in relation to woman as another kind of human being having a female orientation towards a culturally specified masculine and feminine, and defining oneself as woman with this base of reflective self consciousness in relation to man as another kind of human being.

In traditional accounts of the subject-object relation, such as found in Simone de Beauvoir's The Second Sex woman has been described as an object defined by man. In Fuller's account the awareness is of a different sort, it is a mutual synergetic awareness of a 'twoness' that emerges from a recognition that there is an 'inherent otherness'. In her view of woman as other, de Beauvoir stated that:

For him she is sex---absolute sex, no less. She is defined and differentiated with reference to man and not he with reference to her; she is the incidental, the inessential as opposed to the essential. He is the Subject, he is the Absolute---she is the Other.<sup>35</sup>

For de Beauvoir woman as such was not subject in relation to man, she simply allowed herself to be defined from outside of her own being, as an object without consciousness.

Jean Paul Sartre in Being and Nothingness claimed that the first experience of another human being was one of being turned into an object: "Thus for me the Other is first the being for whom I am an object...He is given not as a being of my

universe but as a pure subject through whom I gain my objectness." <sup>36</sup> Sartre and de Beauvoir both interpreted this experience of the other as one of repulsion and hostility. Love, for them was a battle between the sexes, an attempt to avoid being turned into an object by another of similar force, and a simultaneous desire to capture the consciousness of the other for one's own glorification. Sartre concluded:

While I attempt to free myself from the hold of the Other, the Other is trying to free himself from mine; while I seek to enslave the Other, the Other seeks to enslave me... Conflict is the original meaning of being-for-others. <sup>37</sup>

In contrast to this view of the relation of man and woman as fundamentally involved in a hostile interaction as subject and object. Fuller argues that in nature the primary mode of interaction is not conflict, but attraction. Drawing upon Newton's laws of gravitation, or the discovery of a mass interattraction of bodies in close proximity to one another, he argues that "synergy is disclosed by the interattraction for one another of two or more separate objects." <sup>38</sup>

Synergy is connected with mutual awareness. Fuller develops a sequence of mutual self discovery. First, "life's awareness begins with otherness", and then:

Coincidentally synchronized with the discovery of self through the discovery of otherness and otherness's and self's mutual inter-rolling-around, we have the self-discovery of the insideness and outsideness of the otherness. <sup>39</sup>

Here Fuller introduces the notion of an inside and outside that was first considered in this paper in the description of a

tetrahedron. For woman, the inside content of her consciousness as female, and having a masculinity and femininity, and exercising her will to become an individual woman needs to occur in complement with a man engaged in a complement, non-mirror imaged activity. Self definition in relation to another demands the four point reference to male, masculine, feminine, and man in an interattractive mutual awareness with another four point reference of female, masculine, feminine, and woman.

To express this in another way, for the integrity of human life to be understood the non mirror imaged complements man and woman both have to be actively engaged in the activity of his or her self definition. Both are needed in a full explanation of human life. Fuller moves towards considering this philosophical activity as aiming at an "eternal cosmic integrity:. He uses analogies of conception to describe its dynamism:

No insideness without four. Without four, no womb: no birth: no life...the dawning awareness of the integrity of Universe. <sup>40</sup>

In a consideration of the section on male and female as 1/2 quantum each Fuller concludes: " the multiplicative twoness "conception" releases or gives birth to new, coexistent, additive twonesses as independently axially spinnable." <sup>41</sup> Similarly, an individual man and an individual woman are independent and can reflect on their own identities (axially spinnable). However, when through a conscious willful choosing of the pursuit of truth about human nature, men and women mutually delineate their complementary non mirror imaged identities, then it is possible

to have philosophically "multiplicative twoness conception." This is the principle of synergy as applied to the philosophy of sex identity. Put in another way, without the twoness of the complements man and woman, it is not possible to achieve a synergetic understanding of human nature. Fuller describes this search for truth as necessarily synergetic:

Truth is cosmically total: synergetic...Verities are differentiable. But love is omniembracing, omnicoherent, and omni-inclusive, with no exceptions. Love, like synergetics, is nondifferentiable, i.e., is integral...The highest of generalizations is the synergetic integration of truth and love. <sup>42</sup>

### Conclusion and Evaluation

In this paper we have examined Fuller's principle of complementarity which claims that two sets of concepts are necessary for an exhaustive description of a situation; and we have applied this to the philosophy of sex identity to claim that the concept of woman and the concept of man are the two concepts that are necessary for an exhaustive description of human identity. In addition the companion principle of parity, or the claim that these two concepts are not mirror images of one another was found also to apply to the complement concepts of man and woman. Therefore, it can be concluded that the two twentieth century discoveries of physics which Fuller called fundamental principles of nature have some potential application to the philosophy of sex identity.

Secondly, Fuller's claim that a concept is a system that is structured tetrahedronally was tested out in relation to

the history of the concept of woman and the concept of man. It was seen that in the history of philosophy there was an evolution of consideration of the philosophy of man and woman from the perspective of male and female, masculine and feminine, and then man and woman as self defining individuals. These paired entry points into the study of man or of woman provided a four point tetrahedronal structure that actually fit the key entry points into the concept of woman and the concept of man. Specifically, a woman needs to define herself in relation to her base as female, and her psychic contents of consciousness as feminine and masculine within a specified culture. Similarly, a man needs to define himself in relation to his base as male, and his psychic contents of consciousness as masculine and feminine within a specified culture. Therefore, it was concluded that Fuller's claim that the tetrahedronal structure was the most stable structure in nature could have application for a stable foundation point for the philosophy of sex identity.

Next Fuller's own theory of sex identity was examined where it was seen that he began with a focus on the male and female differentiation as concave and convex, and then moved into a further consideration of the male as like the principle of compression and the female as like the principle of tension. For Fuller convexity and concavity, as well as compression and tension were dynamic principles that explained the mutually interactive aspects of the universe. Fuller also positively identified the emerging capacity of woman to move beyond a

biologically determined base as female into a mentally determining base as woman. This was seen as analogous to Fuller's discovery and use of the principle of tension in his architectural designs. The question was raised whether Fuller moved into a reverse sex polarity in which he argued that woman was superior to man, and it was suggested that while he indirectly gave woman the higher valuation through her identification with the principle of tension and the category of the metaphysical, he instead directly argued that men and women as complements were equally significant in a regenerative universe based on the principle of synergy.

The principle of synergy was then examined in its specific application to the relation between man and woman. A comparison was made with the philosophies of de Beauvoir and Sartre which both interpreted the interaction of humans on a model of conflict which primarily sought to reduce the other to an object to be defined by a subject. Fuller, on the other hand, argued that mutual interattractiveness was the primary mode of interaction of bodies in nature, as determined by Newton, and that men and women were no exception to this. For him awareness of the other can lead to fertile discover of otherness as a basis for a kind of conception in "interactive twoness". I argued that this kind of interaction is necessary for the development of a comprehensive philosophical theory of sex identity.

Finally, it should be mentioned that I stopped my analysis at the level of the analysis of the definition of woman

and of man qua individual human beings. The next step would be to consider how the concept of man and woman as individuals can become developed into man and woman as persons. Fuller's theory does not reach beyond the purely rational foundation of philosophy. In order to elaborate on the development of a full personal identity qua man or qua woman there would have to be a philosophy of human community which is lacking in Fuller. This has only been developed in the 20th century through the schools of personalism in France and more recently of existential personalism in Poland.<sup>43</sup> Man as person and woman as person go beyond man as individual and woman as individual through the interpersonal dynamics which engaged them in community. Personal identity can only be fulfilled through interpersonal relationships, so the model of the concept of woman as individual and the concept of man as individual, derived from Fuller, as structured tetrahedrally, would need to go beyond the isolation of a single tetrahedron be joined together into complex structures to depict a communal base. Fuller does consider a variety of structural models which would be interesting to examine from the perspective of interpersonal dynamics. However, the issue of the analogous relation between interpersonal dynamics and architectural structures goes far beyond the limits of this paper as well as beyond the explicitly expressed writing of Fuller himself.<sup>44</sup>

It would seem, then, that Buckminster Fuller offers a very interesting framework within which to consider the issue of



the structure of a philosophy of sex complementarity. By his rigorous reflection on recent developments in the physics of nature he described some fundamental principles that appear to have some valid application to issues in the philosophy of sex identity. They provide a structure for thinking about the concept of woman and the concept of man. The particular application of these general non-mirror imaged and complementary concepts would need to be worked out in individual situations and individual cultures. Some factors such as the female basis in xx chromosomes, hormones, and anatomy or male basis in xy chromosomes, hormones, and anatomy would remain more or less constant from one culture to another, while the masculine and feminine psychic components would have a wider variation. The particular application becomes the challenge of individual women and men in relationship with others to formulate and live in real "synergetic twoness," "synergetic threeness", or "synergetic fourness", and so forth that Fuller so much admired.<sup>45</sup>

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1. For a detailed account of this typology, see Sr. Prudence Allen, RSM, The Concept of Woman: The Aristotelian Revolution (750BC-1250 AD) (Montreal and London: Eden Press, 1985); "Aristotelian and Cartesian Revolutions in the Philosophy of Man and Woman" in Dialogue: Canadian Philosophical Review XXVI/2 Summer 1987, pp. 263-279; and "Sex Unity, Polarity, or Complementarity?" in Women and Men: Interdisciplinary Readings on Gender (Toronto: Fitzhenry and Whiteside, 1987), pp. 3-21.
2. Plato, "Republic" in The Collected Dialogues of Plato, Including the Letters. Edited by Edith Hamilton and Huntington Cairns (New York: Pantheon Books, 1961) 454c; Aristotle, Parts of Animals (Loeb Edition, Cambridge, Mass: Harvard University Press, 1937) 728a 13-27, and "Politics" in The Basic Works of Aristotle, Edited by McKeon (New York: Random House, 1941) 1260a 4-15; Heinrich Cornelius Agrippa, On the Superiority of Woman over Man (New York: American News Company, 1873), pp. 9 and 9-10; Shulamith Firestone, The Dialectic of Sex: The Case for Feminist Revolution (New York: Bantam Books, Inc., 1972), pp. 238 and 244; Lionel Tiger, Men in Groups (New York: Vintage Books, 1970), pp. 48 and 75-8; and Mary Daly, Pure Lust: Elemental Feminist Philosophy (Boston: Beacon Press, 1984), pp. xii and 409.
3. Hildegard of Bingen, Heilkunde: Das Buch von dem inneren Wesen der vershieden Naturen in der Schopfung (Causae et Curae) (Salzburg: Otto Muller Verlag, 1972), p. 140. See, Sr. Prudence Allen, "Hildegard of Bingen's Philosophy of Sex Complementarity",

Thought 4.1 (Spring 1989), pp. 231-241.

4. Fractional complementarity was commonly found in theories that claimed that the man provided reason, the woman intuition; or the man understanding, the woman sense; or the man universal judgments, the woman particular judgments, and so forth. They argued that a woman and man were needed to make up a single whole. My thesis of integral complementarity, on the contrary, claims that a man or a woman as an individual has reason and intuition, understanding and sense, or universal and particular judgments. Each is a whole in respect to these epistemological categories. However, when a man and a woman interact in a relationship of complementarity, because some of the content of their consciousness is different due to their different relationship to maleness, femaleness, masculinity and femininity, the interaction leads to something more. Using a mathematical metaphor it could be said that fractional sex complementarity is expressed as  $1/2 + 1/2 = 1$ , while integral sex complementarity is expressed as  $1+1=3$ .

5. R. Buckminster Fuller, Synergetics: Explorations in the Geometry of Thinking (New York: Macmillan Publishing Co., 1982), Vols. I and II. For an excellent systematic summary of Fuller's thinking see, Derek A. Kelly, "The Philosophy of R. Buckminster Fuller", International Philosophical Quarterly, Vol. xxii, no 4. 88 (December 1982), pp. 295-314.

6. R. Buckminster Fuller, Critical Path (New York: St. Martin's Press, 19--), p. 369. -----Synergetics, Op. cit., 983.049.

7. Fuller, Synergetics, Ibid., 226.10.

8. Fuller, Critical Path, op. cit., p. 7. Note that Fuller identifies the year as 1956 instead of 1957.
9. Fuller, Synergetics, op. cit., 1013.21.
10. Ibid., 792.37.
11. Ibid., 515.15.
12. Ibid., 456.09.
13. Ibid., 108.02.
14. Ibid., 501.101.
15. Ibid., 400.47.
16. See, Sr. Prudence Allen, RSM, The Concept of Woman, op. cit., for a detailed description of this phase in the history of philosophy. The next phase is being elaborated in the second volume entitled The Concept of Woman: The Cartesian Reformation (1250-1800) which is still in unpublished manuscript form.
17. What comes to mind here would be for example a woman whose breasts were removed because of cancer, or an individual who received a sex change operation and who was, say legally defined as a woman but who had xy chromosomes, etc. The act of self definition as woman or as man involves integrating these variables in this exceptional situation just as it does in the usual situation of cultural variability in masculinity and femininity.
18. Fuller, Synergetics, op. cit., 108.02.
19. Some might argue that St. Augustine was the first to articulate the notion of the individual. See, Glen Olson, "St. Augustine and the Problem of the Medieval Discovery of the Individual," Word and Spirit 9 (1987), pp. 129-156. Others might

emphasize that Giovanni Pico Della Mirandola was the first to stress that importance of self definition in human identity. See, "Oration on the Dignity of Man" in Renaissance Philosophy: Vol. 1; The Italian Philosophers, Selected Readings from Petrarch to Bruno, translated by Arturo B. Fallico and Hormar Shapiro (New York: The Modern Library, 1967), p. 143. However, it is not until the nineteenth century beginnings of Existentialism in Kierkegaard's emphasis on the need to become an individual and Nietzsche's emphasis on the need for an individual to become a self by act of will that the challenge to define oneself was developed to such a degree, and that a distinction was recognized between defining oneself qua man or qua woman. See Soren Kierkegaard, Concluding Unscientific Postscript (Princeton: Princeton University Press, 1968), p. 347; and Frederick Nietzsche, Thus Spoke Zarathustra (Harmondsworth: Penguin, 1971), p. 85.

20. Ibid., 1210. (I, p. 748).

21. Ibid., 511.12.

22. Ibid., 1076.12.

23. Ibid., 1076.11.

24. Ibid., 400.04.

25. Ibid., 507.03. See also 610.11.

26. Buckminster Fuller, "Goddesses of the Twenty-First Century" in Saturday Review, March 2, 1986, p. 14. I am indebted to Henry Strub for bringing this articles to my attention.

27. Fuller, Synergetics, op. cit., 643.

28. Ibid., 1024.15.

29. This theory has some relevance for the claim that there is a traditional masculine tendency towards academic specialization which is being countered by a feminine tendency towards interdisciplinary studies as manifested in women's studies.
30. Fuller, "Goddesses", op. cit., p. 15.
31. Ibid.
32. Kelly, op. cit., p. 304.
33. Aristotle, Metaphysics 968a 22-25.
34. Fuller, Synergetics, op. cit., 400.65.
35. Simone de Beauvoir, The Second Sex, (New York: Vintage, 1974), p. xix.
36. J.P. Sartre, Being and Nothingness (new York: Washington Square Press, 1972), p. 361.
37. Ibid., pp. 474-5.
38. Fuller, Synergetics, op. cit., 120.01.
39. Ibid., 905.02 and 981.01.
40. Ibid., 1024.25.
41. Ibid., 1076.13.
42. Ibid., 1005.56.
43. See Emmanuel Mounier, Personalism (South Bend, Indiana: University of Notre Dame Press, 1952), p.79 ; M. Krapiec I-Man: An Introduction to Philosophical Anthropology (New Britain, Ct.: Mariel Publications, 1983), p. 241; and Existential Personalism: Proceedings of the American Catholic Philosophical Association (Washington DC: The Catholic University of America Press, 1986), Vol. LX. This has been traced in Sister Prudence Allen, RSM "Analogy and Human Community in Lublin Existential Personalism",

Toronto Journal of Theology, Vol 5, no 2 (Fall 1989), pp. 236-247.

44. I have attempted to develop these implications for theology in "Integral Sex Complementarity and the Theology of Communion" forthcoming in Communio: International Catholic Review Vol. XVII, no 4 (Winter 1990).

45. This paper was presented at Lonergan University College, Montreal in March 1988 as part of a year long study of the works of R. Buckminster Fuller. It was also presented at The World Congress of Philosophy, Brighton, England in August 1988. I am very grateful for the suggestions for revision which have come from these discussions. In addition, research for this paper has been partially funded by the Social Sciences and Humanities Research Council of Canada.